IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended)A communication system having tunnels formed on a physical communication line and having a plurality of sessions in each tunnel, comprising:

an authentication unit which authenticates ~~the~~ a user using a plurality of said tunnels to determine if said user is a customer of a service of reserving sessions in a smaller number of tunnels in exchange for a specified service fee;

a decision unit for, when said user is authenticated as a customer of said service by said authentication unit, monitoring the state of use of tunnels and sessions used by said user and deciding whether or not the sessions currently used by said user can be reserved in fewer tunnels;

a tunnel control unit which controls the tunnels such that a plurality of sessions used by said user are gathered in a specified tunnel when said decision unit decides that said sessions can be reserved in fewer tunnels; and

a charging unit which charges usage fees according to the number of tunnels or the number of physical communication lines.

2. (previously presented) A communication system comprising:

a first server for accommodating user terminals; and

a second server, connected through a first network with said first server, for

forming a tunnel in said first network in cooperation with said first server and connecting said user terminals to a second network through said tunnel,

wherein said first server comprises:

a first interface for connection to said user terminals,

an authentication unit for authenticating a user of a terminal requesting to be connected through said first interface,

a first tunnel unit for forming, between said first server and said second server, said tunnel to establish a session for said authenticated user, and outputting packets received from said first interface,

a second interface for transferring packets output from said first tunnel unit through said tunnel formed on said first network, and

a control unit for monitoring said session and controlling said first tunnel unit to reserve said session for said authenticated user in fewer tunnels, and

wherein said second server comprises:

a third interface for connection to said first network,

a second tunnel unit for forming, between said first server and said second server, said tunnel for establishing a session for said authenticated user, decapsulating encapsulated packets received from said third interface and outputting the decapsulated packets, and

a fourth interface for transferring the decapsulated packets output from said second tunnel unit to said second network.

3. (previously presented) A communication system according to

Claim 2, wherein said control unit determines a tunnel where a session was disconnected out of a plurality of tunnels, and controls said first tunnel unit to shift a session in another tunnel to the tunnel where the session was disconnected session.

4. (previously presented) A communication system according to Claim 3, wherein said first server further comprises:

a storage unit for storing an administration table for administrating said tunnels, and

wherein said control unit generates said administration table, and administers the establishment of said tunnels and reserving of said sessions according to said administration table.

5. (previously presented) A communication system according to Claim 4, wherein said control unit detects disconnection of a session, registers the disconnected session in said administration table, searches said administration table for a session on another tunnel movable to the tunnel where said session was disconnected, and transmits a session switchover message, including identification information of a searched-out session, to said second server, and

wherein said second server, in response to said switchover message, moves the session on the other tunnel to the tunnel where said session was disconnected.

6. (previously presented) In a virtual private network, a communication method for transferring packets received by a first communication

interface through a second communication interface, said communication method comprising the steps of:

reserving a first logical path on a first physical communication line connected to said second interface;

reserving a first session on said first logical path;

reserving a second logical path on a second physical communication line connected to said second interface;

reserving a second session on said second logical path;

monitoring a bandwidth of said first logical path; and

when some spare bandwidth exists on said first logical path determined as a result of said monitoring step, reserving again said second session, which was previously reserved on said second logical path, on said first logical path according to a degree of available bandwidth on said first logical path.

7. (previously presented) A communication method according to Claim 6, wherein said step of reserving the first session on said first logical path comprises the steps of:

reading a state of use of said first logical path from a first storage unit where the state of use of said first logical path is stored,

deciding whether or not a new session can be reserved on said first logical path based on the state of use, and

when the decision is that a new session can be reserved, registering a new session to be reserved in said first storage unit;

wherein said step of reserving the second session on said second logical path comprises:

reading a state of use of said second logical path from a second storage unit where the state of use of said second logical path is stored,

deciding from the state of use read whether or not a new session can be reserved on said second logical path; and

when the decision is that a new session can be reserved, registering a new session to be reserved in said second storage unit; and

wherein said step of monitoring the bandwidth of said first logical path comprises:

reading the state of use of said first logical path from the first storage unit for administrating a service condition of said first logical path, and

deciding from the state of use read whether or not a new session can be reserved on said first logical path.

8. (previously presented) A communicating method according to Claim 6, further comprising the steps of:

allocating a service level to said session,

wherein said step of monitoring the bandwidth of said first logical path monitors a total service level of sessions reserved on said first logical path, and

wherein said step of reserving the session, previously reserved on said second logical path, on said first logical path further comprises:

calculating a service level from the total service level of said session and all

service levels allocable to said logical path,

comparing the service level of the session reserved on said second logical path with the calculated service level, and

when, according to a result of said comparing step, the service level of the second logical path reserved on the second physical line is not higher than the calculated service level, reserving the session, previously reserved on said second logical path, on said first logical path.

9. (previously presented) A communication method according to Claim 1, wherein said step of reserving the session, previously reserved on said second logical path, on said first logical path comprises the steps of:

reserving a new session on said first logical path,

transferring packets, previously transmitted through the session reserved on said second logical path, through a new session reserved on said first logical path, and

disconnecting the session reserved on said second logical path.

10. (previously presented) A communication method according to Claim 9, further comprising the steps of:

allocating a service level to said session;

monitoring the traffic of said session; and

when the traffic of said session does not match the allocated service level, adjusting the service level of said session to match the traffic.

11. (previously presented) A communication method according to Claim 10, wherein said step of adjusting said service level of said session to match the traffic decreases the service level of said session when the traffic of said session is lower than a threshold value, or increases the service level of said session when the traffic of said session is higher than the threshold value.

12. (currently amended)A communication system for building a VPN, comprising:

a first interface which connects to a user terminal through a network~~communication line~~;

an authenticating unit which authenticates a user requesting a connection through said first interface;

a tunnel unit which forms a tunnel for establishing ~~a session~~sessions for said authenticated user, and encapsulating and outputting packets received from said first interface;

a second interface which transfers packets, output from said tunnel unit, to another network; and

a control unit which monitors said sessions, and controls said tunnel unit to reserve sessions in a fewer tunnels.

13. (previously presented) A communication system according to claim 12, wherein said control unit controls said tunnel unit to determine a tunnel where a

session was disconnected, out of a plurality of tunnels, and move a session on another tunnel to the tunnel where the session was disconnected.

14. (previously presented) A communication system according to Claim 13, further comprising:

a storage unit for storing an administration table to administer said tunnel,

wherein said control unit generates said administration table and administers establishment of said tunnel and reservation of said session according to said administration table.

15. (previously presented) A communication system according to Claim 14, wherein said control unit detects disconnection of a session, registers the disconnected session in said administration table, searches said administration table for a session on another tunnel likely to be able to be shifted to the tunnel where said session was disconnected, generates a session switchover message, including identification information about the searched-out session, and transmits said session switchover message from said second interface.

16. (previously presented) A computer-readable recording medium for storing a program instructing a computer to execute steps for transferring packets received from a first communication interface through a second communication interface, said steps comprising:

reserving a first logical path on a first physical line connected to said second

interface;

reserving a first session on said first logical path;

reserving a second logical path on a second physical path connected to said second interface;

reserving a second session on said second logical path;

monitoring the bandwidth of said first logical path; and

when some spare bandwidth exists on said first logical path determined as a result of said monitoring step, reserving said second session, previously reserved on said second logical path, on said first logical path according to a degree of available bandwidth on said first logical path.

Claims 17-19 (canceled).